O W N E R ' S M A N U A L

PARASOUND

HCA-1500A High Current Power Amplifier



LUCASFILM THX®

IMPORTANT SAFETY INSTRUCTIONS

The lightning flash with the arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of “dangerous voltage” within the product’s enclosure that may constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the product.

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

1. **Read Instructions** — Read all the safety and operating instructions before operating this product.
2. **Retain Instructions —** Retain safety and operating instructions for future reference.
3. **Heed Warnings** — Adhere to all warnings on the product and in the operating instructions.
4. **Follow Instructions** — Follow all operating and use instructions.
5. **Cleaning —** Unplug this product from the wall outlet before cleaning. Use a damp cloth for cleaning.
6. **Attachments** — Do not use attachments not recommended by the product manufacturer; they may cause hazards.
7. **Water and Moisture —** Do not use this product near water.
8. **Accessories —** Do not place this product on an unstable cart or stand. The product may fall causing bodily injury and damage to the product.
9. A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.
10. **Ventilation** — Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating. These openings must not be blocked or covered. *This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided.*
11. **Power Sources —** Operate this product only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your dealer or local power company. This product is equipped with a three-wire grounding type plug. This plug will only fit into a grounding type power outlet. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.
12. **Power Cord Protection —** Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them.
13. **Lightning**— For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power line surges.
14. **Overloading —** Do not overload wall outlets or extension cords. This can result in a risk of fire or electric shock.
15. **Object and Liquid Entry** - Never push objects of any kind into this product through openings; they may touch dangerous voltage points or short out parts that could result in a fire or electric shock.
16. **Servicing —** Do not attempt to service this product yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
17. **Damage Requiring Service** — Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions: a) When the power-supply cord or plug is damaged. b) If liquid has been spilled, or objects have fallen into the product. c) If the product has been exposed to rain or water. d) If the product does not operate normally by following the operating instructions. e) If the product has been dropped or damaged in any way. f) When the product exhibits a distinct change in performance.
18. **Replacement Parts** — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
19. **Safety Check** — Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
20. **Wall or Ceiling Mounting** — Mount the product to a wall or ceiling only as recommended.
21. **Heat** — The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

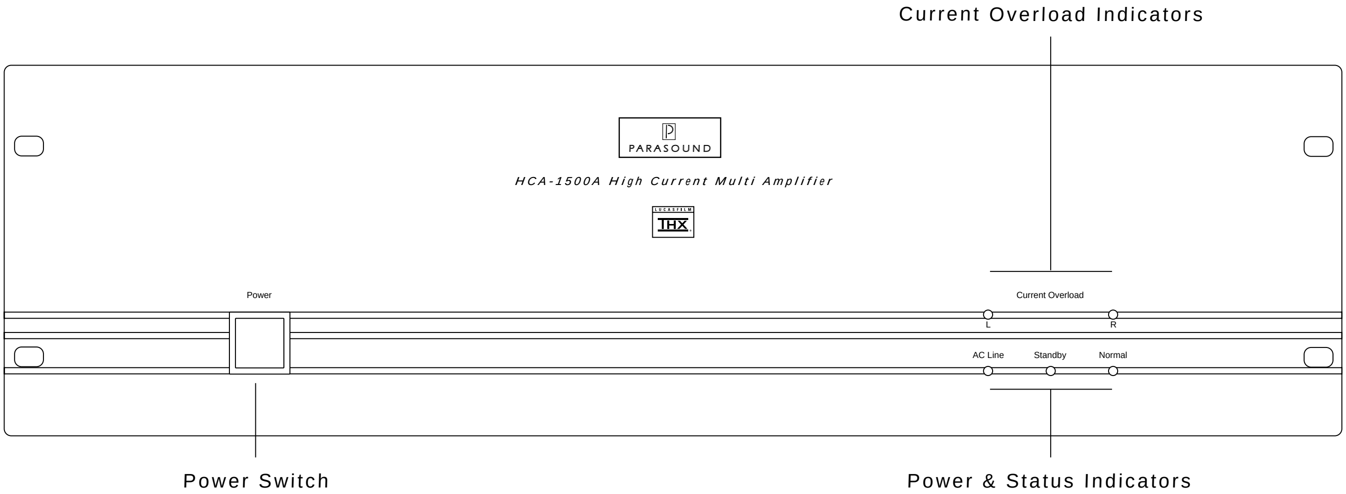


Figure #1

HCA-1500A Front Panel Drawing

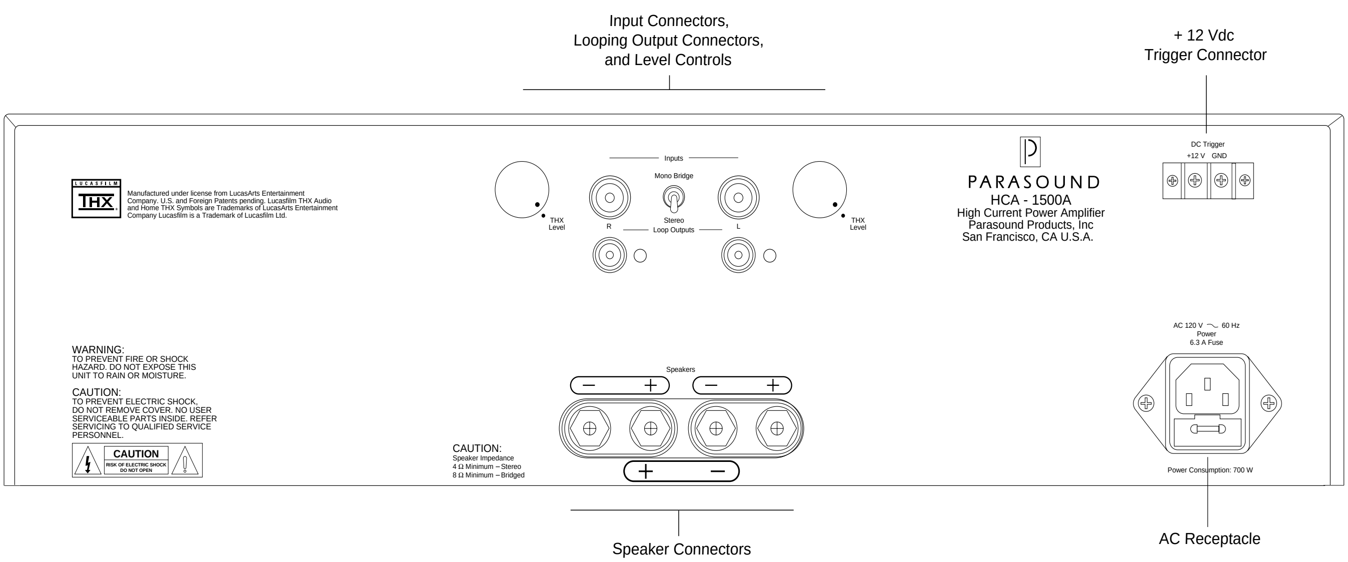


Figure #2

HCA-1500A Front Panel Drawing

Introduction

Congratulations on your purchase of this precision audio component and thank you for your selection of Parasound. Your HCA-1500A was designed by renowned circuit designer John Curl to meet or surpass the stringent standards required by Lucasfilm for use in THX Home Cinema systems. Each precision component within your HCA-1500A is carefully selected for optimum sound quality on even the most challenging music and film soundtracks.

Parasound amplifiers have greater operational flexibility and power than most other amplifiers you may have used, so please take a few moments now to read these instructions thoroughly so you may fully understand the various capabilities of your new Parasound power amplifier.

Unpacking Your Amplifier

Carefully unpack your amplifier and remove all the enclosed accessories including the remote control and detachable AC cord. Be sure to inspect the unit for any possible shipping damage. If you see any, contact your Parasound Dealer immediately. Be sure to save both cartons and the packing inserts for future transport and always pack the inner carton into a protective outer carton before shipment.

Before you proceed, find the serial number located on the rear panel of your unit. Record it here for future reference. ____________________

Installing and Rack Mounting Your Amplifier

Place your amplifier away from heat sources such as air ducts or radiators. Always mount the amplifier horizontally and make sure that your cabinet or shelf can support its weight. It is best to provide a separate shelf for your amplifier rather that stacking it directly above or below your other components.

The HCA-1500A occupies three rack spaces (5 1/4") into a standard 19 inch equipment rack. Be sure to use heavy duty mounting bolts to and nylon shoulder washers on both sides of the faceplate to avoid scratching the amplifier’s front panel and prevent ground loops. Call Middle Atlantic Products at (201) 839-1011 to obtain information about a wide variety of rack mounting hardware. When mounting equipment into an equipment rack, it is always a good idea to have someone help support the unit while you bolt it to the rack rails.

Ventilation Requirements for Your Amplifier

To insure safe and reliable operation, it is very important that the amplifier has *plenty of ventilation* to prevent overheating and automatic shut down from its thermal protection circuitry. Please observe the following ventilation guidelines when installing your Parasound amplifier in a cabinet or other enclosed area: 1) If you are not using a fan, allow *at least* six inches on each side and above the amplifier, and *do not* close off the front with a cabinet door or panel. 2) If you are enclosing the amplifier within an equipment cabinet, use a fan to draw in cool air and exhaust warm air. In either case, two vent holes are required: one for intake and one for exhaust. 3) Do not place the amplifier on carpeting that will obstruct the air flow into the bottom of the amplifier chassis and heatsinks. 4) Avoid stacking components. If you do, you *must* use a fan to circulate the warm air that quickly becomes trapped between them.

Making Connections to Your Amplifier

Leave the AC cord disconnected before making any signal or speaker connections. When making connections to the amplifier, make sure there is no strain or tension on the input leads, speaker wires, or AC cord that could cause them to pull loose.

Input Connections

Connect the output of your preamplifier or processor to the right (red) and left (white) channel RCA jacks for stereo operation. For bridged mono operation, use only the right channel input jack and leave the left channel jack disconnected.

Output Looping Connections

The right (red) and left (white) channel output looping RCA jacks provide you with a convenient way to connect multiple amplifiers together from one source for multi-room/multi-zone applications. Once you have connected the source to input jacks, you can connect these looping output jacks to the input of an additional power amplifier without having to use separate "Y" connectors.

Speaker Connections

You may connect solid or stranded wire up to AWG 12, 1/4" spade lugs, single or dual banana plugs to the five-way binding posts of your power amplifier. If you use bare wire without terminals, make sure you remove only enough insulation so the wire fits through the hole that runs sideways through the terminal's binding post. Before inserting the wire, twist all its strands tightly to prevent strays that could cause a short circuit. (You may want to "tin" the stripped wire with solder to prevent it from fraying and oxidizing.)

Polarity

It is important to observe correct polarity. When you connect speakers to your amplifier, you will notice that one side the two conductor speaker wire will have some sort of mark: either printing, a raised ridge on the insulation or a different color of conductor. This lets you know which wire is connected to the positive and which to the negative speaker terminals so you can do exactly the same at the power amplifier binding posts. Polarity is marked separately on the rear panel for both stereo and bridged connections.

Minimum Impedance Precautions

Connect loudspeakers with a 4 Ω or 8 Ω nominal impedance for normal operation. Your amplifier is capable of driving speakers with occasional impedance dips below 2 Ω. However, sustained high power operation into loads of less than 4 Ω may cause overheating and is therefore not recommended.

Bridged Mono Operation

For bridged operation, we recommend an 8 Ω minimum mono load. This restriction results from the mathematics of the bridging circuitry. In the bridged mono mode each channel of the amplifier functions for only the positive or negative half of the musical waveform. As a result, each channel "sees" only *half* of the speaker's impedance. Use of an 8 Ω speaker means that the load for each channel is 4 Ω. For a 4 Ω speaker, the impedance would be only 2 Ω per channel.

Rear Panel Bridged Mono Switch

Select Mono (up) or Stereo (down) as marked on the rear panel. The main power should be switched off before moving this switch. If you accidentally leave the Mono Bridge switch in the Mono (up) position, you will find stereo output will be weak and distorted.

Bridged Mono Speaker Connection

In the bridged mono mode, connect the speaker to only the left red positive terminal and the right red positive terminal. In the bridged mode the right channel's red terminal becomes positive, and the left channel's red terminal becomes negative. Do not use either of the black negative terminals. You may also use a single standard 3/4" (19 mm) dual banana plug for the mono bridge connection to the two inner red positive terminals.

AC Power Connections and AC Grounding

Before you connect the AC cord, make sure you amplifier's power switch is in the off position and the external DC trigger is off. If possible, plug your amplifier directly to an AC wall outlet. Do not connect the amplifier to the accessory AC outlet on your preamplifier or processor because the amplifier's current draw exceeds the ratings of most preamplifier's power switches and power cords. If you use an external AC line conditioner or surge suppressor, make sure it can withstand the current draw of the amplifier.

DC Trigger Connection

This connector provides a way to trigger your amplifier on with an external DC voltage source ranging from + 9 Vdc to +12 Vdc. With the main power switch on the off (down) position, the amplifier can be turned on with voltage from any external DC source such as the +12 Vdc trigger from the Parasound P/SP-1500. Since it is optically coupled, the DC trigger only requires 15 mA of current to activate the circuitry and turn on the amplifier.

Operating Your HCA-1500A

Power Switch

Manual Turn On

Press the upper side to turn the unit on manually; press the lower side to turn the unit off.

Automatic Turn On

When the power switch is in the off position, the power amplifier can be turned on with an external DC voltage applied at the DC trigger connector on the rear panel. (See above)

AC Line LED

The AC line LED on the front panel of your amplifier will illuminate whenever AC is present at the AC connector. This LED indicates that the AC cord is connected and power is applied to the amplifier.

Standby/Normal Operation LEDs

The red Standby LED will light when the amplifier is turned on either with the power switch or an external DC trigger. It will stay lit about four to five seconds while the amplifier circuits stabilize. After that, the red LED will turn off and the green normal LED will signal that the protection relays have switched off and that amplifier is ready to operate.

The Standby LED will also light whenever there is a short circuit or other fault that triggers the protection circuitry. This may indicate that excess DC is present at the amplifier's input, a speaker impedance overload, a short circuited speaker line, or possible internal fault. If this LED remains lit, remove power to the amplifier and check all connections. During this time, the protection circuits should automatically reset. If the red LED stays lit after you reapply power, contact your Parasound Dealer, Installer or Parasound Technical Service for further advice.

Current Overload LEDs

The Current Overload LEDs for left and right channels will only illuminate if the unit is driven past its maximum current capacity. These LEDs are not clipping indicators, but rather are designed to signal you when you are exceeding the limits of your amplifier. If these LEDs light, it’s usually a sign that your speaker impedance is too low, resulting in too much current draw from the amplifier's power supply. In virtually all imaginable listening situations with recommended loads, these LEDs should never illuminate.

Level Controls

Each channel has its own rear mounted "set and forget" input level control. Your amplifier sounds best with these level controls set to maximum, where they are effectively out of the audio signal path. However, if your preamplifier has very high gain, and its volume control cannot track properly for left-right channel balance near its minimum position, it may be necessary to reduce the input level control settings on the amplifier. When using the HCA-1500A in a THX installation, each level control *must* be set at maximum, which corresponds to 0 dB THX reference level.

Maintaining Your Parasound Amplifier

The HCA-1500A requires no periodic maintenance and has no user serviceable parts inside. To avoid the risk of electric shock, do not remove the top cover. The amplifier's exterior can easily be cleaned with a soft cloth moistened with water or Windex.

Main Power Fuse

Your amplifier has an external fuse located within the AC receptacle that may blow as a result of an internal fault condition. This protects the unit from possible damage to internal parts. *Never replace this fuse with a larger value than installed from the factory*. Substitution of a larger fuse may create serious stress or damage to internal parts and will void your warranty.

In Case of Trouble

If you suspect a problem with your amplifier, first turn the amp off and check all your connections. The trouble may be caused by another component or a defective hookup cable. If you are hearing hum out of your speakers, turn off the amplifier and disconnect the inputs to it. If the hum goes away, it is probably be caused by your processor or one of the source components connected to it.

Frequently hum in home theater systems is caused by a grounding problem with the cable TV system. Contact your cable provider if necessary to make sure the cable feed into your house is properly grounded. There are cable isolation devices available such as the Video Link #634 or the Mondial Magic specifically designed to cure this problem. In rack mounted systems, ground loops and hum can sometimes develop via the metal rack rails of the equipment rack. This problem can be solved with nylon shoulder washers available from Middle Atlantic Products (refer to rack mounting section of this manual).

If All Else Fails

Call your Parasound dealer or Parasound Technical Service. We can suggest other diagnostic tests you can easily perform. If we determine that your amplifier should be returned to Parasound or an Authorized Parasound Warranty Center for inspection and possible servicing, call for the location of a warranty center near you. If you choose to send it to Parasound, contact us to obtain a Return Authorization (RA) number. You will be asked to repack the unit in its original packaging *plus* an additional outer box for protection during transit. The Return Authorization number must be clearly marked on the outer carton only. You should ship the unit by UPS with adequate insurance. You must also include a copy of your purchase receipt to validate your ownership.

Units that arrive without your specific Return Authorization number, without a suitable shipping carton or evidence of improper internal packing must be refused. We do not accept collect shipments. After repair under warranty, the unit will be returned to you via prepaid UPS. In the case of an out of warranty repair, contact us and we will advise you of the repair charges before you ship the unit to us. The same packing and Return Authorization requirements apply.

Parasound HCA-1500A Specifications

Continuous Power Output - Stereo
205 Watts RMS x 2, 20 Hz-20 kHz, 8 Ω, both channels driven
315 Watts RMS x 2, 20 Hz-20 kHz, 4 Ω, both channels driven

Continuous Power Output - Mono
630 Watts RMS, 20 Hz-20 kHz, 8 Ω

Current Capacity
60 Amperes peak per channel

Slew Rate
> 130 V/µsecond

Frequency Response
5 Hz-100 kHz, +0/-3 dB at 1 watt

Total Harmonic Distortion
< 0.03 % at full power; < 0.01 % typical levels

IM Distortion
< 0.03 %

TIM
Unmeasureable

Dynamic Headroom
> 1.5 dB

Interchannel Crosstalk
> 80 dB at 1 kHz
> 60 dB at 20 kHz

Input Impedance
33 kΩ

Input Sensitivity
1 V for 28.28 V; THX Reference Level; 1.2 V for full output

S/N Ratio
> 110 dB, input shorted, IHF A-weighted

Damping Factor
> 800 at 20 Hz

Dimensions
19“ wide x 5 1/4“ high x 16“ deep (5 7/8” high with feet)

Weight
40 lb net

Special Features for the Parasound HCA-1500A

- Designed by John Curl
- THX certified by Lucasfilm Ltd.
- Independent power supplies for each channel
- Massive 1 kVA toroid power transformer
- 60,000 µF computer-grade capacitors in power supply
- Multiple polystyrene film bypass capacitors in power supply
- DC Trigger Auto On Feature
- Cascoded Class A input stages with matched J-FET pairs
- Handpicked complementary MOSFET transistors in high voltage driver stage
- 8 complementary pairs of 15 ampere 50 MHz output transistors
- Output transistors direct-coupled to speakers without LRC networks
- DC servo direct-coupled audio circuits with 0.8 Hz rolloff
- High-bias Class A/AB operation
- Gold-plated metal structure RCA input jacks
- Gold-plated looping output jacks
- Multiple temperature sensors and silver-cadmium relay protection
- Glass epoxy circuit boards, double-sided for precision
- Custom designed audiophile-grade AC power cord
- Multiple Protection Circuits

Notes:

The Parasound HCA-1500A is Manufactured under license from Lucasarts Entertainment Company. U.S. and foreign patents pending. Lucasfilm Audio and Home THX are trademarks of Lucasarts Entertainment Company, Lucasfilm is a trademark of Lucasfilm Ltd.

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